

# **THE MPA STORY: A NATIONAL OVERVIEW**



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NMPAC: science, tools and training for the nation's MPAs

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Presented by Dr. Charlie Wahle, Director, Science Institute, National Marine Protected Areas Center, in September 2002.

# THIS TALK

- **MPA 101**
- **What's all this fuss about MPAs?**
- **The MPA Executive Order**
- **The National MPA Center**
- **The NMPAC Science Institute**
- **Links to Education**

I'd like to introduce some of the concepts this presentation will cover. The first part will lay the groundwork with some common terms about MPAs and how we use them. There's controversy and variation on what these terms mean, but we can clearly define some for working purposes here. The second part is the meat of why we're talking about MPAs. This is not a simple issue. It's a complicated endeavor and there's always controversy about whether and how and when and why there should be MPAs. This presentation will give you a framework to understand some of the issues. The presentation will review the MPA Executive Order that President Clinton signed in May of 2000 in response to the growing interest in MPAs. This created the MPA Center, and under that, the Science Institute where I work. And finally, how some of these issues and needs relate to education.

# SOME KEY TERMS OF ART

**Marine Protected Area** = any area of the marine environment that has been reserved by federal, state, territorial, tribal or local laws or regulations to provide lasting protection to part or all of the natural or cultural resources therein (E.O. 13158).

**Marine Reserve** = a category of MPA in which all some or all extractive uses are prohibited (e.g. no take).

**Marine Sanctuary** = a type of MPA in which multiple compatible uses are generally allowed, often managed through zoning.

**Networks of MPAs** = a series of *ecologically* linked MPAs.

We'll start with some terms. You may not agree with these completely, but this provides us with a set of working definitions. An MPA is defined by the federal Executive Order (and by the international community), as an area in the marine environment set aside or reserved (which is a legal term) by some authority to provide lasting protection for the natural or cultural resources therein. Now, there's ambiguity built in here, partly by design. As an example of some of the questions we grapple with, take the word lasting: Is it forever, is it five years, is it six months? Questions remain about how to interpret this definition, but in the operational sense in the federal system, we use this very generic term for an MPA. Clearly, many areas fall under this definition.

One of these types, a catalyst for much of the controversy in this country, is marine reserves or no-take areas. We have really very few of these in which all or some extractive uses are prohibited—less than 1% of the nation's waters are in no-take status. That's not very much. But listening to some of the controversy and reading the articles in the paper, you'd think that upwards of 50 or 60% of the MPAs are reserves.

Another example of an MPA and which many of you are familiar with is a marine sanctuary. These are typically not marine reserves, although some of them contain areas that may be. These are usually a large site where multiple human uses are allowed and managed, often through zoning. Activities are allocated in space and time to maximize the benefit to the user community and minimize the impacts to the environment.

And finally, networks of MPAs. This term in the simplest sense is a series of MPAs that have ecological linkage among them; larvae can get from one place to another, adults can swim back and forth, species breed here, feed there. It's more than just drawing a line around the 14 sanctuaries and calling them a network. There's some functional connection between them.

## MPAs Are A Multi-Purpose Management Tool

- Conserve biodiversity and ecosystem functions
- Ensure sustainable uses of ocean resources
- Provide areas for research, education, recreation
- Support traditional uses and cultural values
- Balance compatible uses through zoning
- Provide control sites to assess ecosystem change
- Restore important but degraded habitats

Why do we do this? There are many reasons for MPAs. These are not mutually exclusive; you can have all or any of these in any given MPA. Among these reasons is that they're very effective at conserving biodiversity and maintaining ecosystem function, particularly in an area where you have effective management. They're also useful to ensure sustainable uses of those resources and especially sustainable fisheries. They provide areas for research, for education, and for recreation. They support traditional use and cultural values, sometime by design and sometimes as a secondary consequence. They can be very useful in balancing compatible multiple uses through zoning, a technique that's only relatively recently been applied to the oceans. Probably our best example of zoning in this country is the Florida Keys where they've done some very innovative things with zoning, and it is working very well. They provide control sites, which will be increasingly important for us as we try to assess consequences of change in the rest of the ecosystem. And then, finally, they're useful for restoring important habitats that have been degraded either through general environmental degradation or through negative human impacts.

## 31 FLAVORS: US MPAs Can Have Different:

- Purposes
- Types
- Legal Authorities
- Levels of Government
- Agency Programs
- Allowable activities

One of the roots of the controversy about MPAs is that people tend to think of them as being some monolithic, one-size-fits-all thing. And usually that thing is a no-take reserve, usually it's big, and it's right where I want to fish.

That's actually not the case. What's true is that there's a diversity of types, purposes and origins, so much so that it can be difficult to deal with as a whole. In this country, we have MPAs for many purposes and affording different types of protections. They're established under and with different legal authorities. They're run by different levels of government, including federal, state, local, and tribal. And the programs running them are very different. For example, at NOAA, you have marine sanctuaries and estuarine research reserves. In the Department of the Interior, our partners have the national parks, refuges, monuments, and shores. All of which fall under this MPA umbrella. They are different—they have different management approaches, different styles. And finally, they are very different in what is allowed and prohibited, and how that's accomplished. The bottom line is that in this country, we have many MPA types which are not clearly understood, I think, both by government as well as by the people that they affect.

## Three Main Purposes Of MPAs In The US

- Maintain ecosystem integrity and biodiversity
- Sustain fisheries
- Protect cultural resources, heritage and values

We try to resolve some of that diversity and simplify it for our own purposes, for planning, and for dealing with the public and affected stakeholders. These are the primary goals of MPAs that are commonly found in the U.S. One is to maintain ecosystem function and integrity and biodiversity. Another is to sustain fisheries. A third is to protect cultural resources and heritage and the human values of the ocean. Again, these are not necessarily mutually exclusive, but many of our MPA programs and management tend to be focused on one of these for their principal purpose.

For example, the National Marine Sanctuary Program's fundamental purpose is to maintain ecosystem integrity and biodiversity. Sometimes, in the process of protecting the integrity of a particular area, they propose actions that protect fisheries. But the principal purpose of the program at the site is biodiversity. Similarly, we have the Monitor Sanctuary established primarily to protect a single cultural resource. But in the process of doing that, it protects the encompassing natural resources as well.

This distinction of primary purpose is increasingly important when talking to people about MPAs—what MPAs mean to them, their benefits and their costs. Because it becomes a very different discussion than if we say we just need to protect nature. It's a very different discussion, with different causes and usually different outcomes.

## THE COMMON THREAD

- A place-based management tool to ensure that the nation's most important marine habitats and resources are sustained for future generations.

There are some commonalities among all these types of MPAs—they're all about place based management. This may sound trivial, but it has important consequences for how you think about managing the environment. Think about the difference between managing a species that ranges all up and down the west coast as opposed to managing a particular place. It's an important idea to emphasize in the discussion. The idea is that these places are set aside to ensure that the country's most important habitats and the resources that they encompass persist, thrive, and are sustained not only for our uses but for others as well. This is a theme that you'll find throughout the National parks, the Sanctuaries, and in many other MPA systems.

## Why do we need them now?

- 50% of the U.S population lives within 50 miles of the coast.
  - Filling of wetlands
  - Coastal deforestation
  - Run-off of land-based fertilizers
  - Overfishing
  - Pollution and disease

Why are MPAs receiving so much media attention now? 50% of the U.S population lives within 50 miles of the coast and is projected to be between 60% and 70% by the year 2020. The explosion in population growth has put a tremendous amount of stress on our coastal environment. For example, coastal development has filled in valuable wetlands and compromised the important role wetlands play as nursery grounds for many young and vulnerable marine species. Coastal deforestation has contributed to increased loads of silt and sediments that are carried to coastal waters as run-off and are very damaging to sensitive corals or mangrove communities. Furthermore, run-off containing large quantities of land-based fertilizers have triggered harmful algal blooms in our coastal waters that are increasing in their intensity and occurrence. These harmful algal blooms in combination with pollution and disease have been the source of numerous beach closures and loss of valuable tourist dollars. Fisheries collapses on both coasts have brought economic, social and ecological devastation to fishing communities that depend on healthy fisheries. MPAs have been put forth as a tool to address these problems within our coastal and oceanic waters.

# History of MPAs

- 15th century banning of certain fishing gear in Europe;
- Seasonal, area and gear closures throughout fishing history;
- 'Kapu s' in Hawaii

*But.....*

- 'Inexhaustible sea' by T.H. Huxley
- In the past we have always had 'de facto' marine protected areas

The History of MPAs reveals that we have been using MPAs for a long time. Already dating back to the 15<sup>th</sup> century, MPAs were used in Europe to protect bottom habitat by banning certain fishing gear in those areas. Throughout fishing history, MPAs have been extensively used to establish seasonal, area, or gear closures.

An interesting and probably highly effective use of MPAs, due to the method of enforcement, can be found in the history of Hawaii. Captain James Cook on his voyages through Hawaii came across the Kapu system, which was an extensive system of MPAs under authority of the chief of the tribe. Violation of Kapu or fishing within a kapu was punishable by death.

Our long history of using MPAs, primarily for managing a harvestable resource, ended in the late 19<sup>th</sup> century when the paradigm shifted to the 'inexhaustible sea,' a theory postulated by T.H. Huxley. His theory proposed that the ocean was inexhaustible, and infinite in its ability to supply food and absorb any practice or abuse. The perception that the ocean is inexhaustible persists until today. In the past we also always had 'de-facto' MPAs, those areas protected from human influences and practices, because they were too remote or dangerous to reach. Advances in technology have made most 'de facto' MPAs obsolete.

## RECENT ORIGINS OF THE MPA TREND

- National Oceans Conference in Monterey calls for a national system of MPAs
- Expert MCBI-Cousteau panel recommends that the President create a national system
- National Academy of Sciences recommends science-based use of MPAs

There have been MPAs in this country for many years. But there's been a lack of consistent framework of thought to the process; it works pretty well, but there's some room to grow. And in the past few years, other people have come to this conclusion.

The first organized public voicing of the idea that we need to use MPAs as an ecosystem management tool came out of the National Oceans Conference which was in Monterey in 1998. One of the many bullets of a scientific panel said that we need to make a network of MPAs. In early 2000, there was an expert panel led by the Marine Conservation Biology Institute jointly with the Cousteau Society to discuss this concept of a national system of MPAs. Their recommendation to the president was that we need to create a national network. Roughly in the same time frame, the National Academy came out with the report *Marine Protected Areas: Tools for Sustaining Ocean Ecosystems*. In it, they lay out the rationale for how and why one can use MPAs.

## ORIGINS, CONTINUED

- National Center for Ecological Analysis studies
- AAAS Meeting – Scientific Consensus Statement
- Congressional Oceans Caucus priority issue
- Federal, state & local MPA initiatives and legislation emerging across US

All this continues, all within the past 5 years. The National Center for Ecological Analysis and Synthesis at UC Santa Barbara has now had two working groups (one has just finished and one is just getting started) looking at the design of marine reserves, no-take areas and some of the scientific underpinnings of the issues. These groups are coming out with some interesting results that will drive some of the future actions. Also in the past few years, there was a scientific consensus statement of 140 or more credible scientists saying that MPAs are a useful tool, they should be used more, here are some useful ways. Congress listened to what was going on and some members of the Oceans Caucus identified it as an important issue, something that they want to pay attention to.

All these were happening independently. And at the same time there were a number of largely state and local MPA planning processes spun up just in the past few years. So it's a big trend. As a result, some people are really enthusiastic and hopeful, while others are scared and mobilizing to stop things. So there's a lot going on.

# CONSISTENT RECOMMENDATIONS

- MPAs can provide real benefits, when:
  - Designed and managed from a sound scientific basis
  - Established with meaningful stakeholder input
- MPAs work best when specifically designed as part of an ecologically integrated network of sites
- MPAs must be continually monitored to evaluate effectiveness and to enable adaptive management

There are some consistent themes or recommendations that have come out of these many efforts. The key one is that the scientific community believes that MPAs can provide real benefits—ecological, economic, and social—if and when they're designed and managed in a sound scientific manner. That's beginning to happen, but we've got quite a long ways to go. Probably more importantly in practice, is that they have to be established with meaningful and consistent stakeholder input. And by stakeholders we mean all stakeholders, anybody who has an interest. That's part of work that we do at the MPA center.

The second point is that MPAs work best when they are part of an ecologically integrated network.

One that I forgot to put on here is that they work best when they actually protect something. That means, for example, no-take reserves or significant protections that are aimed at curbing the most significant threats to the resource.

And the final one, and this is very important for all of you, is that it's critical that we evaluate them over time. This means a long-term commitment to monitor the effectiveness of MPAs, so we can tell people that A) They are meeting their goals and we can tell people that it was really worth their sacrifice, and B) we adaptively manage them as the systems change, and they do change.

## A CASE IN POINT: ONGOING WEST COAST MPA PLANNING

- **CALIFORNIA**
  - Channel Islands Marine Reserves Process
  - Marine Life Protection Act Process
  - Marine Sanctuaries MP Reviews
- **OREGON**
  - OPAC working group
- **WASHINGTON**
  - State Agencies
  - Local Voluntary Closures
  - North West Straits Commission
- **REGIONAL**
  - Pacific Marine Fisheries Council
  - CEC North American MPA Network \*

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This can give you an idea of just some of the regional efforts; this shows that there's a lot going on about MPAs. In California, there's the Channel Islands Marine Reserves Process nearing completion; it's extremely controversial and an interesting model. The Marine Life Protection Act is a state-wide effort to create a variety of MPAs for a variety of purposes, also very controversial. It's about mid-way through its development. And then we have four National Marine Sanctuaries in California in some state of revisiting their management framework; in effect, redesigning their MPAs.

Oregon is pretty well down the road in thinking about using marine reserves on an experimental basis—it's an issue that they're very clearly committed to.

In the state of Washington there are a number of efforts through the state agencies, and through local voluntary closures that seem to be particularly effective in building support for them. The North-West Straits Commission is in itself a very interesting story of a sanctuary MPA designation gone awry, and then turning into a grass-roots, bottom-up effort which seems to be going very well.

At the same time on a regional scale cutting across all the states, we have the Pacific Fisheries Management Council beginning to seriously evaluate marine reserves for fisheries management and as they relate to fisheries considerations. The last one is not a process that will result in MPAs but an inter-governmental tri-national effort to think about how one might design a network of MPAs on the west coast: the Commission on Environmental Cooperation, with the US, Mexico and Canada as members.

The point of this slide is that there are a lot of efforts, there are a lot of potential benefits to be gained in the environment, and there are a lot of interests at stake in seeing whether this actually comes to play or not.



This is the reality of the MPA controversy. The previous slides might lead you to believe that we all love MPAs, and if we could just figure out where best to put them all will be well. But the actual national dialogue looks like this.

This happened in the Florida Keys where the denizens of the Keys were not happy about the marine sanctuary. They hung the superintendent in effigy. In the end there were compromises made. The science has established that the sanctuary's very effective, and these same people now are strong supporters of the sanctuary. They now come to the superintendent and say can we set up a no-take area here because it's so effective. Although the superintendent still remembers the hanging, he's now in a different position.

But what this says to me, because we see versions of this wherever we go, is that we have a long way to go translating this interesting supportive and objective information into something that people can live with. And that's what we hope that you all can help all of us with.

## **National MPA Center Executive Order Tasks**



### **Work with federal agencies and other partners to:**

- **Develop a science-based framework for a national network of MPAs.**
- **Coordinate and share information, tools, strategies.**
- **Seek the expert advice and recommendations of states, territories, tribes, regional Fishery Management Councils, resource managers, and other interested parties and organizations.**
- **Establish a web site for MPA information including the MMA database and MPA list**

All this background led to the Executive order. It provides a framework for thinking about these concepts and applying them. One key piece is to develop a science-based framework for a national system – without defining what the national system needs to look like. A first step to this is defining common terms and common criteria for what you're trying to achieve. The second piece is that it is critical to coordinate amongst the players and to share the information—this is a main function of the MPA center. The third directs the federal government to seek advice from experts. And the final one is a tool to implement this coordination, an MPA web site with useful information for anyone interested in these issues from any prospective.

## National MPA Center

### What the Executive Order Does Not Do

- Does not designate any new sites.
- Does not create any new federal authorities.
- Does not change any state, local or tribal authorities.
- Does not restructure existing programs.
- Does not focus only on ‘no take’ reserves.
- Does not target specific areas.

It's also important in this discussion to explain what the Executive Order was not intended to do. It does not give the federal government authority or direction to set up MPA sites outside of existing MPA programs. It doesn't create any new authorities. It doesn't change local or tribal authorities at all—everything that was in place is still in place. It doesn't focus solely on no-take reserves and it doesn't target specific areas. It doesn't talk about percentages, either.

What it does do, is provide a mechanism to try to get all the federal and state agencies working in synchrony.

# NATIONAL MARINE PROTECTED AREAS CENTER

An Innovative Partnership Between NOAA And DOI  
To Provide Science, Tools and Training For The  
Nation's Marine Protected Areas



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One of the key directives of the Executive Order is to create the National MPA Center in order to accomplish these higher goals. The Center is an innovative partnership--federal agencies working together on a long-term basis to plan and implement some conservation measures. NOAA and Interior are the key players; other agencies, including the Department of Defense, etc. are part of it. This effort is to provide the implementing agencies the science needed to make informed decisions, the tools needed to implement those decisions, the training for their staff and others to more effectively work in the MPA arena, and the information to help their stakeholders understand what's going on.

There are currently three pieces of the MPA center. There's the headquarters group, with traditional headquarters function of planning and coordinating, with outreach and liason. And there are two institutes. One is focused on training and technical assistance in Charleston, SC, based at NOAA's Coastal Services Center. This group has worked effectively in the coastal zone arena and staff are working to develop training and tools for MPA mapping. The Science Institute in Santa Cruz is focused on science.

## **MPA Program vs. MPA Center Responsibilities**

### Agency Programs

- MPA designation
- MPA management
- MPA improvements

### National MPA Center

- Information
- Tools & training for improved stewardship
- Strategies for effective design and management of the nation's MPA network

The Center has a broad mission. One concept that we've discovered is very important to get across is this idea of the relative responsibilities of the Center vs the actual MPA programs, like Sanctuaries and Parks. Those programs will always do the real work. They designate sites, they manage them, they evaluate them, they change the management regime to improve them. They have the legal authorities, they're independent, and they remain independent. Our role is to help them work as effectively as possible. We provide information, we develop tools and training, and we develop strategies for how best to design and manage MPAs.

## National MPA Center

### Increasing Awareness and Understanding of MPAs

## Information Sources

- *mpa.gov* web site
  - Monthly updates
  - Bi-annual major revisions
  - MMA database
- **Virtual MPA library**
  - Web sites
  - Publications
  - Meetings and symposia
- **National and regional information clearinghouses**
  - Planned for FY2003



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These next slides illustrate some of the projects at the Center. One of the key resources is the MPA.gov web site. We have monthly updates, with new information going up regularly and periodic larger revisions.

There's a library with a lot of useful information, filling an important need, providing links to publications, meetings and other web sites. It contains the beginning of the MPA inventory.

This is designed to be a central place where anyone who needs information about MPAs can go to find what they need to know, or jump directly to the place that has that information. We're looking for input on this all the time. If any of you have ideas about content or design, please contact us.

## National MPA Center Increasing Awareness and Understanding of MPAs Outreach to Stakeholders

- MPA Federal Advisory Committee
- State, tribal, and FMC outreach
- Commercial and recreational fishing communities
  - Workshops in cooperation with NMFS in FY2003
- Participation in the meetings of stakeholder organizations
- Federal Inter-Agency MPA Working Group



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We're involved in a lot of outreach efforts. We go to existing meetings of states and tribes and management councils, essentially giving this presentation. We're working very closely with the commercial and to some extent the recreational fishermen in workshops and training. We're involved in a lot of stakeholder meetings.

A key outreach effort is dealing with stakeholders through the soon-to-be-established Federal Advisory Committee. The Committee will act under laws that govern how the government gets advice from people. This group will be responsible for giving advice to both the Secretary of Commerce and the Secretary of the Interior on the larger MPA issues. It won't be micromanagement. Their focus will be on bigger issues. Rather than looking at what's happening in the Channel Islands, they'll work discuss what's a reasonable way to design a network of MPAs on the west coast. And how to incorporate both fishermen's interest and scientific knowledge into MPA planning.

**National MPA Center**  
**Increasing Awareness and Understanding of MPAs**  
**Education**



- **Regional “intermediaries” workshops with National Estuarine Research Reserve System, National Marine Sanctuary Program, Sea Grant**
  - Wye River, MD - November 2001
  - Duluth, MN - September 2002
  - Morro Bay, CA – September 2002
- ***Sherman’s Lagoon* © MPA education poster**



In the education realm: here we are. We're working on a program to bring the MPA information that we have to educators and others to both inform us and incorporate this information into your programs.

## **National MPA Center Strengthening Stewardship Capabilities Training and Technical Assistance**



### **Technical Assistance**

- South Atlantic FMC marine protected area siting project
- National Marine Sanctuary Program management plan updates & boundary reviews
- Southeast Coast and Ocean Margin Program bathy/habitat (Oculina Bank, Gray's Reef, Charleston Bump)

### **Training for MPA Site Staff**

- Workshops with Estuarine Reserves, FMCs, Sea Grant, Marine Sanctuaries to assess needs
- Database of existing training and technical assistance providers and referrals
- Conflict management, needs assessment and public issues training

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The Training and Technical Assistance group in Charleston is doing some innovative work. They conducted an MPA needs assessment of resource managers. The needs assessment was conducted through focus groups and telephone contact with managers to identify what is needed from the Training and Technical Assistance Institute. That report is available on the Coastal Service Center's web site; a technology needs assessment is now underway. They're developing training programs on MPA-related topics, such as the public process for designating MPAs. And programs for using explicit spatial technologies. This responds directly to a consistent theme we hear from the stakeholders about their need for this type of information and where can they get it.

Examples of some of the projects being pursued by the Institute include:

- Providing assistance with GIS and decision support tools for an MPA designation process underway by the South Atlantic FMC
- Provide support for MPA managers during their management plan review process
- Design of a database of service providers, available for your use
- Development of an MPA short course

The Training and Technical Assistance Institute also offers skill-building courses for managers working in the public eye, such as public issues and conflict management, and how to conduct a needs assessment.

**National MPA Center**  
**Determining Scientific Needs, Doing the Work**  
**Science and Analysis**

- **First U.S. database of Federal, State & tribal Marine Managed Areas -- State & tribal work initiated in FY2002**
- **Analyses of state, territorial and tribal MPA policies**
- **Natural and social science strategies – guidance for management agencies, funders and scientists to strengthen MPA science foundation**
- **Research partnerships – Cowcod reserve evaluation; CA MPLA Science Team; Pelagic predator MPAs; Pacific Integrated Assessment (FY2003)**
- **Effectiveness measures clearinghouse with Council on Environmental Cooperation**



On the science side, we're developing a database of marine managed areas, which is proving to be more complicated than originally expected. The origin of this was a clause in the Executive Order which says federal agencies, do no harm to MPAs. In order to make sure of this, we need to provide a list of where they are. In its simplest form, the inventory was going to be a list, but it turned into a database and a tool which will help us answer the questions, what do we have out there now, is it working, and do we need more.

# MPA INVENTORY

- Comprehensive database of all marine managed areas (MMAs) in the US
- Sequence: federal -> state - > local/tribal
- Data will allow anyone to:
  - Identify what areas are now MPAs (!)
  - Assess levels of protection among existing sites
  - Identify potential gaps in national coverage

This will be a comprehensive database throughout all US waters, federal and state, of marine managed areas. This is the broader definition of any place that has some additional protection or management. This MMA inventory will be the first cut, and then we'll start applying filters to sort out what kinds of categories we have. We started out with the federal sites and we're gearing up an intensive effort to work with the states.

The inventory will answer the question of where the MPAs are. And we don't know that exactly. We do know that there are many, but we can't sit down and draw a map. That's absolutely critical in the policy area to know what you have and what they're for and are they working. So this inventory is designed not only to tell us where these things are but give us information that will allow us to at least make a first assessment of whether they are effective at achieving their goals, and then from that to identify potential areas that need additional protection.

# Do We Need Science?

## Throughout The Entire MPA Life Cycle:

- Assessment of management problems
- Identification of key resources and habitats
- MPA siting and design
- Development of zones and regulations
- Resolution of emerging user conflicts
- Evaluation of existing MPA effectiveness
- Enabling adaptive management

Science is important to the entire MPA process. There can be unintended consequences harmful to the environment if science isn't considered, especially as MPAs interact with other management schemes. And science-based decision-making is the law, not just a phrase. It's in the legislation of most MPA authorities. Expert panels can say MPAs are important but we have to be science-based. And we have constituents who are demanding that we do a better job of incorporating science into what we do.

And then we come to the question of when. Is it just in the beginning when designing a network of reserves? The answer is that it's a life-time thing.

It's important in the assessment of whether we need additional management measures. Sometimes the answer is no or some other traditional fisheries management.

It's important in identifying the key resources and habitat, in designing and siting the MPA, and in developing zones and regulations that affect the management of the MPA. This is a critical point that's overlooked--much of the focus is on MPA or not and if so, where. But the science is really important in management, to resolve or avert user conflicts, to evaluate whether it's working, and if not, what changes are needed. So the science is during the entire life-cycle of MPAs.

## Science Needs Can Differ Among MPA Types

- **Biodiversity and Ecosystem Focused MPAs**
  - *E.g.*: sanctuaries, parks, refuges
  - *Science*: exploration, priority habitats, user impacts
- **Fisheries Management MPAs**
  - *E.g.*: area based closures
  - *Science*: stock assessment, socioeconomics, spillover, connectivity, monitoring and evaluation, fisheries integration
- **Protected Species MPAs**
  - *E.g.*: critical habitat
  - *Science*: migrations, life history phases, human interactions
- **Cultural Resource MPAs**
  - *E.g.*: sanctuaries, parks, monuments
  - *Science*: survey and inventory, historical human context

In brief, there are four kinds of MPAs: biodiversity, fisheries, protected resources and cultural resources. There are unique science needs for each that are very different. If you use a reserve to manage fisheries, you'd better know about stock assessment. For protected species management, you need to protect the appropriate habitat, you need to understand the species' life history and you must make sure that the MPA is managed with this in mind. And cultural resource MPAs have a different set of science needs, including archaeological site surveys and historical research.

# TELLING THE MPA STORY

- What is an MPA?
- Role of MPAs in comprehensive ecosystem management
- Distinction between MPAs for ecosystem protection and fisheries management
- Fundamental importance of stakeholder engagement

These are some of the underlying issues that we often struggle with. We need to have a common language when talking about these issues—right now, we don't. Some hear the term MPA and think of a general framework for habitat management, while others think immediately about fishery exclusion zones. The MPA story is about inclusivity—including stakeholders in the process, including MPAs as one part of comprehensive ecosystem management. MPAs are set up for many reasons. We need to better educate the whole community on these issues. This is where you can come in—these are some of the ideas to think about as you go through the next couple of days.